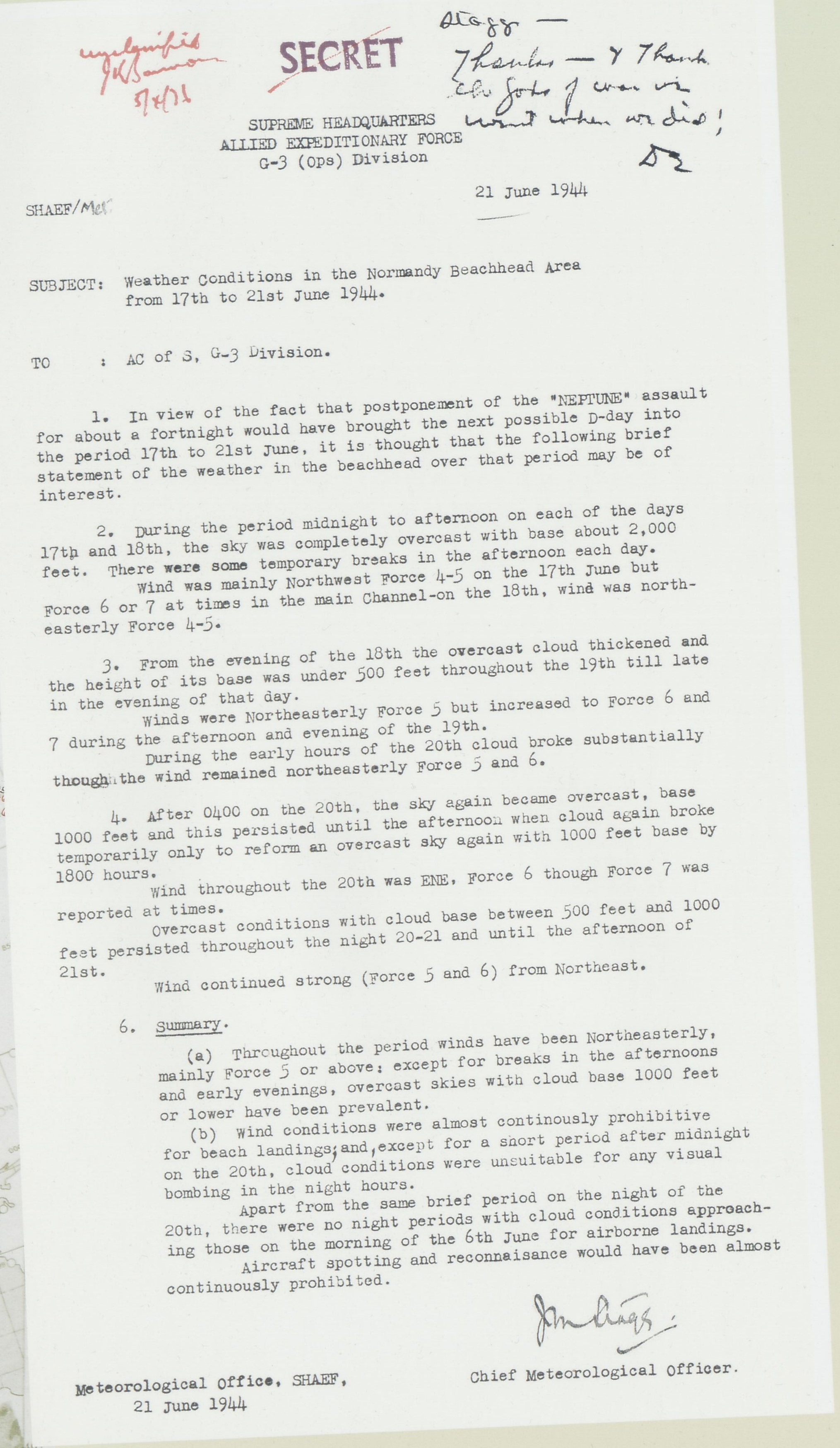
6 JUNE 1944

D-DAY

The weather forecasts that changed history



SUPREME HEADQUARTERS
ALLIED EXPEDITIONARY FORCE
G-3 (Ops) Division

21 June 1944

SHAEF/Met

SUBJECT: Weather Conditions in the Normandy Beachhead Area from 17th to 21st June 1944.

TO : AC of S, G-3 Division.

1. In view of the fact that postponement of the "NEPTUNE" assault for about a fortnight would have brought the next possible D-day into the period 17th to 21st June, it is thought that the following brief statement of the weather in the beachhead over that period may be of interest.

2. During the period midnight to afternoon on each of the days 17th and 18th, the sky was completely overcast with base about 2,000 feet. There were some temporary breaks in the afternoon each day.

Wind was mainly Northwest Force 4-5 on the 17th June but Force 6 or 7 at times in the main Channel-on the 18th, wind was north-easterly Force 4-5.

3. From the evening of the 18th the overcast cloud thickened and the height of its base was under 500 feet throughout the 19th till late in the evening of that day.

Winds were Northeasterly Force 5 but increased to Force 6 and 7 during the afternoon and evening of the 19th.

During the early hours of the 20th cloud broke substantially though the wind remained northeasterly Force 5 and 6.

4. After 0400 on the 20th, the sky again became overcast, base 1000 feet and this persisted until the afternoon when cloud again broke temporarily only to reform an overcast sky again with 1000 feet base by 1800 hours.

Wind throughout the 20th was ENE, Force 6 though Force 7 was reported at times.

Overcast conditions with cloud base between 500 feet and 1000 feet persisted throughout the night 20-21 and until the afternoon of 21st.

Wind continued strong (Force 5 and 6) from Northeast.

6. Summary.

(a) Throughout the period winds have been Northeasterly, mainly Force 5 or above; except for breaks in the afternoons and early evenings, overcast skies with cloud base 1000 feet or lower have been prevalent.

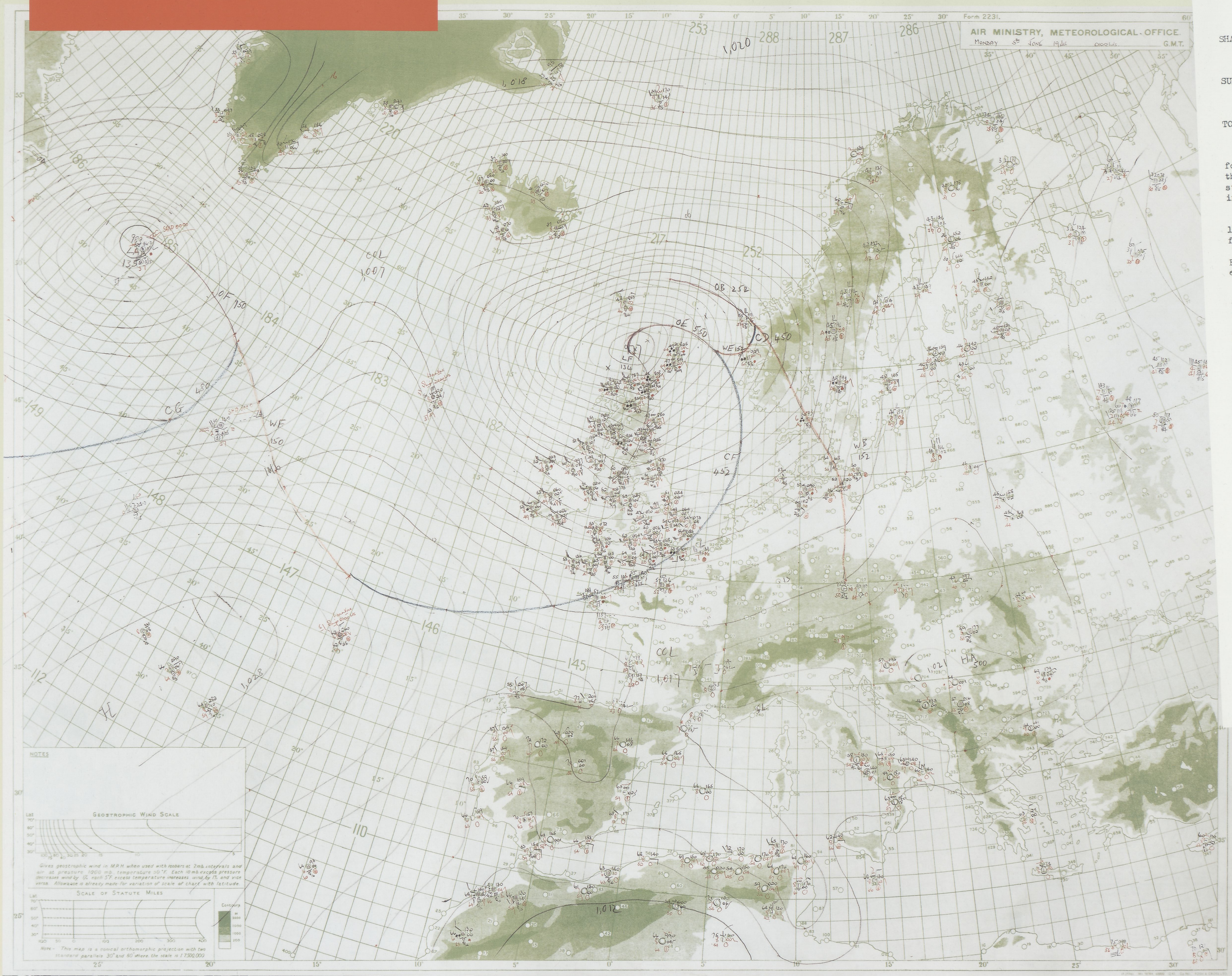
(b) Wind conditions were almost continously prohibitive for beach landings; and, except for a short period after midnight on the 20th, cloud conditions were unsuitable for any visual bombing in the night hours.

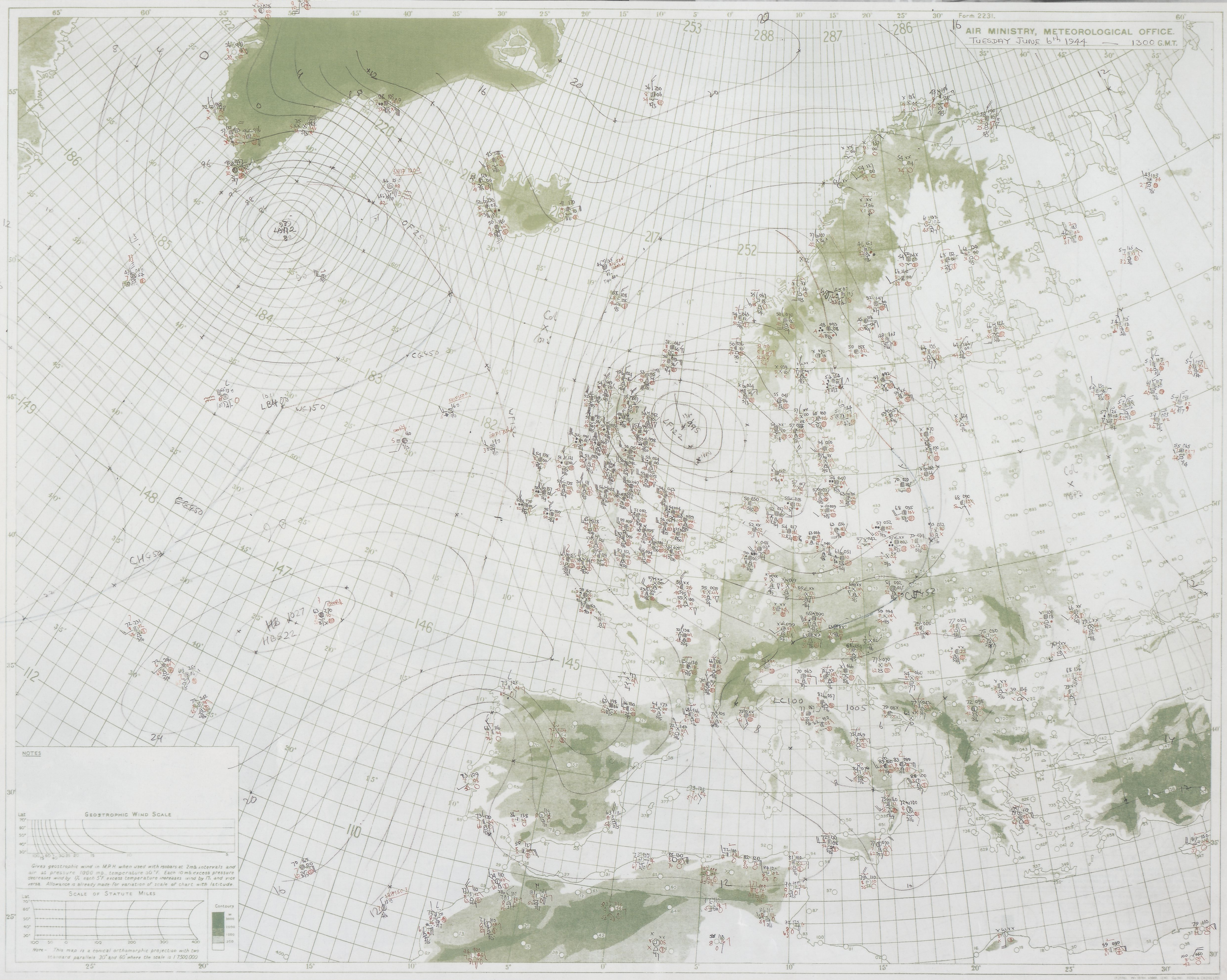
Apart from the same brief period on the night of the 20th, there were no night periods with cloud conditions approaching those on the morning of the 6th June for airborne landings.

Aircraft spotting and reconnaisance would have been almost continuously prohibited.

Meteorological Office, SHAEF,
21 June 1944

Chief Meteorological Officer.





The most important forecasts we ever made

Supreme Allied Commander General Dwight Eisenhower may have thanked the gods of war for the timing of the D-Day landings, but it was accurate weather forecasts which enabled the successful assault on Normandy on 6 June 1944 which led to the liberation of mainland Europe.

Whilst planning the assault, Eisenhower realised that the weather would be the most important unknown factor in its success. In order to prepare, Group Captain JM Stagg (RAF and Chief Meteorological Officer at Supreme Headquarters Allied Expeditionary Force) — pictured right — and his deputy Colonel Donald N Yates (US Army Air Forces), along with Royal Navy Instructor Commander John Fleming (meteorologist to the Naval C-in-C Allied Expeditionary Force) were charged with combining the views of three weather forecasting centres: the Met Office (then, with the Royal Air Force, part of the Air Ministry); the US Army Air Force; and the Royal Navy's own Weather Service.

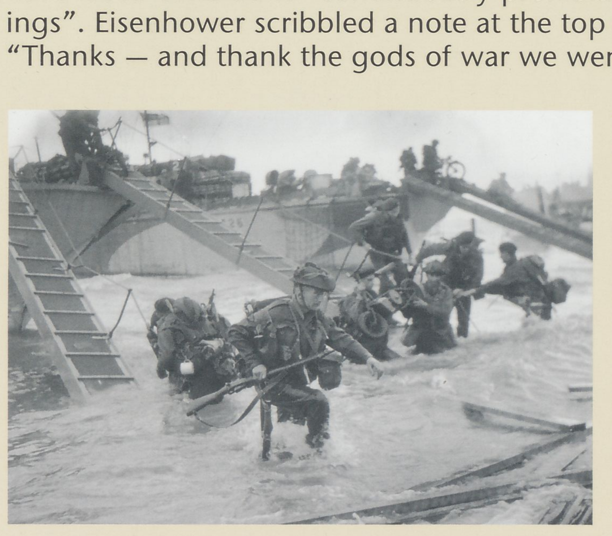
The weather had been fairly settled during May 1944, but four days before the original D-Day planned for 5 June, as Allied naval forces concentrated for the assault across the English Channel, stormy weather approached from the Atlantic. Twenty-four hours before the planned landings, the forecast was for rough seas for the crossing and bad weather for air support. The assault was delayed for at least another 24 hours and some ships had to be recalled.

Then, on 5 June, while anxious Met Officers hurried to make forecasts, a report arrived from one of the ships out in the Atlantic making weather observations. This, and observations such as the chart (above left) from 0100 GMT on 5 June, helped forecast a developing ridge of high pressure behind the cold front giving the previously expected rain. There was going to be a brief break in the stormy weather; an opportunity to get the ships across the Channel for the overnight airborne landings and for first troops to land from the sea, early on 6 June.

Boldly relying on this indication, Stagg gave his historic advice that there would be a 24-hour window of opportunity on June 6 1944, for the D-Day landings. The next possible date was sometime between June 19 and June 21. Eisenhower asked Field Marshal Montgomery and his other senior commanders for their opinion; they believed Stagg's forecast and agreed they should go.

The chart (bottom left) was plotted at the Met Office's Central Forecast Office in Dunstable at 1300 GMT on 6 June 1944. It is the first to include an observation made by Allied forces on the beaches, which shows broken cloud, good visibility and a Beaufort Force 4 onshore breeze. Also remarkable on this map are the observations from German-occupied Europe. Berlin had broadcast these by radio, in cipher, for Luftwaffe use, but they had also been intercepted in England and were deciphered and plotted at Dunstable.

On both 4 and 5 June, crucial decisions had been made on the basis of forecasts very different from the weather that the commanders could actually see. In a memo (above) marked 'SECRET', Stagg told Eisenhower that if he had waited until 19 June, his forces would have faced conditions "continuously prohibitive for beach landings". Eisenhower scribbled a note at the top of Stagg's memo: "Thanks — and thank the gods of war we went when we did".



Today, Met Office forecasters use some of the most powerful computers in the world, which run mathematical models to make predictions. Stagg's memo remains a constant reminder that good commanders ignore meteorological advice at their peril.

Key to weather chart symbols

e.g. Portsmouth

61	38	094	8	10L
Temperature in degrees Fahrenheit	Dew point in degrees Fahrenheit	Sea level pressure in millibars and tenths (1009.4 mb)	Visibility on scale 1–9 (8=very good)	Pressure tendency over past 3 hours (falling then steady 1.0 mb)

Total cloud cover in tenths (6/10) — Weather over past 3 hours (overcast) — Wind speed and direction (NW'ly force 4) — Rain — Drizzle — Rain shower — Thunderstorm

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